

APPENDIX B

ASSESSMENT TABLES

CARDIORESPIRATORY FITNESS TESTS

Males

1.5 Mile Run					
%	Age 20-29	Age 30-39	Age 40-49	Age 50-59	Age 60+
99	7:29	7:11	7:42	8:44	9:30
95	8:13	8:44	9:30	10:40	11:20
90	9:09	9:30	10:16	11:18	12:20
85	9:45	10:16	11:18	12:20	13:22
80	10:16	10:47	11:44	12:51	13:53
75	10:42	11:18	11:49	13:22	14:24
70	10:47	11:34	12:34	13:45	14:53
65	11:18	11:49	12:51	14:03	15:19
60	11:41	12:20	13:14	14:24	15:29
55	11:49	12:38	13:22	14:40	15:55
50	12:18	12:51	13:53	14:55	16:07
45	12:20	13:22	14:08	15:08	16:27
40	12:51	13:36	14:29	15:26	16:43
35	13:06	13:53	14:47	15:53	16:58
30	13:22	14:08	14:56	15:57	17:14
25	13:53	14:24	15:26	16:23	17:32
20	14:13	14:52	15:41	16:43	18:00
15	14:24	15:20	15:57	16:58	18:31
10	15:10	15:52	16:28	17:29	19:15
5	16:12	16:27	17:23	18:31	20:04
1	17:48	18:00	18:51	19:36	20:57

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CARDIORESPIRATORY FITNESS TESTS
Females

1.5 Mile Run					
%	Age 20-29	Age 30-39	Age 40-49	Age 50-59	Age 60+
99	8:33	10:05	10:47	12:28	11:36
95	10:47	11:49	12:51	14:20	14:06
90	11:43	12:51	13:22	14:55	14:55
85	12:20	13:06	14:06	15:29	15:57
80	12:51	13:43	14:31	15:57	16:20
75	13:22	14:08	14:57	16:05	16:27
70	13:53	14:24	15:16	16:27	16:58
65	14:08	14:50	15:41	16:51	17:29
60	14:24	15:08	15:57	16:58	17:46
55	14:35	15:20	16:12	17:14	18:00
50	14:55	15:26	16:27	17:24	18:16
45	15:10	15:47	16:34	17:29	18:31
40	15:26	15:57	16:58	17:55	18:44
35	15:48	16:23	16:59	18:09	18:54
30	15:57	16:35	17:24	18:23	18:59
25	16:26	16:58	17:29	18:31	19:02
20	16:33	17:14	18:00	18:49	19:21
15	16:58	17:29	18:21	19:02	19:33
10	17:21	18:00	18:31	19:30	20:04
5	18:14	18:31	19:05	19:57	20:23
1	19:25	19:27	20:04	20:47	21:06

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ONE MILE WALK TEST

Test Administration: The purpose of this test is to estimate cardiovascular fitness level. A ¼mile running track is ideal. Trainees are instructed to walk one mile **as fast as possible** and note their time. After completing the test, the trainee should continue walking slowly for 5 minutes to cool down.

Cardiovascular Fitness Rating For One Mile Walk

Rating	Men Under 40	Men Over 40	Women Under 40	Women Over 40
Excellent	13:00 or less	14:00 or less	13:30 or less	14:30 or less
Good	13:01 - 15:30	14:01 - 16:30	13:31 - 16:00	14:31 - 17:00
Average	15:31 - 18:00	16:31 - 19:00	16:01 - 18:30	17:01 - 19:30
Below Average	18:01 - 19:30	19:01 - 21:30	18:31 - 20:00	19:31 - 22:00
Low	19:31 or more	21:31 or more	20:01 or more	22:01 or more
First Test: Date:_____				
Your Cardiovascular Rating (circle one):				
EXCELLENT	GOOD	AVERAGE	BELOW AVERAGE	LOW
Second Test: Date:_____				
Your Cardiovascular Rating (circle one):				
EXCELLENT	GOOD	AVERAGE	BELOW AVERAGE	LOW

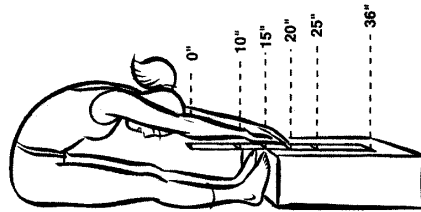
Reference: Walking Handbook, Susan Johnson, Ed.D., The Cooper Institute for Aerobics Research, 1997.

FLEXIBILITY MEASURE: SIT AND REACH TEST

Materials: Sit and Reach Box (see diagram below).

Procedures:

1. This test measures the flexibility of the muscles in the lower back and hamstrings.
2. Instruct participant to remove shoes.
3. Instructor demonstrates the procedure: (1) Legs are fully extended and the soles of the feet are placed flat against the Sit and Reach Box; (2) hands placed one on top of the other; (3) the arms are extended as far forward as possible in a smooth motion and held for a count of three (do not lurch forward - move slowly); (4) the point at the tip of the fingers is the indicator of flexibility.
4. Guard against the participant's knees bending by keeping a hand on the knees to detect movement.
5. Caution the participant against bouncing or jerking forward.
6. Three trials are given. Use best score for the indicator. See charts on the following pages for assessment.



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Box Specifications:

- 12 inches high with the yardstick taped to the top so that it extends 15 inches in front;
- or,

Use a step and add 15 inches to result. If unable to reach step, measure distance toward it and subtract 15 inches (e.g., if trainee misses step by 2 inches, result is 13 inches).

FLEXIBILITY
Sit and Reach

Males

	AGE					
%	<20	20-29	30-39	40-49	50-59	60+
99	>23.4	>23.0	>22.0	>21.3	>20.5	>20.0
95	23.4	23.0	22.0	21.3	20.5	20.0
90	22.6	21.8	21.0	20.0	19.0	19.0
85	22.4	21.0	20.0	19.3	18.3	18.0
80	21.7	20.5	19.5	18.5	17.5	17.3
75	21.4	20.0	19.0	18.0	17.0	16.5
70	20.7	19.5	18.5	17.5	16.5	15.5
65	19.8	19.0	18.0	17.0	16.0	15.0
60	19.0	18.5	17.5	16.3	15.5	14.5
55	18.7	18.0	17.0	16.0	15.0	14.0
50	18.0	17.5	16.5	15.3	14.5	13.5
45	17.3	17.0	16.0	15.0	14.0	13.0
40	16.5	16.5	15.5	14.3	13.3	12.5
35	16.0	16.0	15.0	14.0	12.5	12.0
30	15.5	15.5	14.5	13.3	12.0	11.3
25	14.1	15.0	13.8	12.5	11.2	10.5
20	13.2	14.4	13.0	12.0	10.5	10.0
15	11.9	13.5	12.0	11.0	9.7	9.0
10	10.5	12.3	11.0	10.0	8.5	8.0
5	9.4	10.5	9.3	8.3	7.0	5.8
1	<9.4	<10.5	<9.3	<8.3	<7.0	<5.8

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FLEXIBILITY
Sit and Reach

Females

	AGE					
%	<20	20-29	30-39	40-49	50-59	60+
99	>24.3	>24.5	>24.0	>22.8	>23.0	>23.0
95	24.3	24.5	24.0	22.8	23.0	23.0
90	24.3	23.8	22.5	21.5	21.5	21.8
85	22.5	23.0	22.0	21.3	21.0	19.5
80	22.5	22.5	21.5	20.5	20.3	19.0
75	22.3	22.0	21.0	20.0	20.0	18.0
70	22.0	21.5	20.5	19.8	19.3	17.5
65	21.8	21.0	20.3	19.1	19.0	17.5
60	21.5	20.5	20.0	19.0	18.5	17.0
55	21.3	20.3	19.5	18.5	18.0	17.0
50	21.0	20.0	19.0	18.0	17.9	16.4
45	20.5	19.5	18.5	18.0	17.0	16.1
40	20.5	19.3	18.3	17.3	16.8	15.5
35	20.0	19.0	17.8	17.0	16.0	15.2
30	19.5	18.3	17.3	16.5	15.5	14.4
25	19.0	17.8	16.8	16.0	15.3	13.6
20	18.5	17.0	16.5	15.0	14.8	13.0
15	17.8	16.4	15.5	14.0	14.0	11.5
10	14.5	15.4	14.4	13.0	13.0	11.5
5	14.5	14.1	12.0	10.5	12.3	9.2
1	<14.5	<14.1	<12.0	<10.5	<12.3	<9.2

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DYNAMIC STRENGTH: PUSH-UP TEST

A person who suffers from lower back ailments should not perform this test.

Materials: Gym mat

Procedures:

1. This test measures the dynamic strength and endurance of the arm, chest, and shoulder muscles.
2. Instructor demonstrates the correct technique.

Males: (1) Lie on stomach, legs together; (2) position hands under shoulders and pointing forward; (3) push up from the mat by fully straightening elbows and using toes as pivotal point; (4) keep upper body in a straight line, don't bend the back; (5) lower body to within two inches of the mat; neither stomach nor thighs should touch the mat.

Females: (1) Lie on stomach, legs together; (2) position hands under the shoulders and pointing forward; (3) push up from the mat by fully straightening elbows and using knees as pivotal point; (4) keep upper body in a straight line, don't bend the back; (5) lower body to starting position, chin touches the mat, the stomach should not touch the mat; (6) lower legs remain in contact with the mat, ankles straight (point toes).

3. Check for improper technique:

Males: (1) bending the back; (2) not lowering to within 2 inches of the ground.

Females: (1) bending the back; (2) not lowering chin to mat; (3) stomach touches the mat.

4. Perform as many push-ups in proper form as you can.
5. Record the number of properly executed push-ups on the assessment form.
6. Compare results to charts on following pages.

DYNAMIC STRENGTH
Push Up

Males

AGE

%	20-29	30-39	40-49	50-59	60+
99	100	86	64	51	39
95	62	52	40	39	28
90	57	46	36	30	26
85	51	41	34	28	24
80	47	39	30	25	23
75	44	36	29	24	22
70	41	34	26	21	21
65	39	31	25	20	20
60	37	30	24	19	18
55	35	29	22	17	16
50	33	27	21	15	15
45	31	25	19	14	12
40	29	24	18	13	10
35	27	21	16	11	9
30	26	20	15	10	8
25	24	19	13	9.5	7
20	22	17	11	9	6
15	19	15	10	7	5
10	18	13	9	6	4
5	13	9	5	3	2

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DYNAMIC STRENGTH
Full Body Push-Up

Females

AGE

%	20-29	30-39	40-49*
99	53.0	48.0	23.0
95	42.0	39.5	20.
90	37.0	33.0	18.0
85	33.0	26.0	17.0
80	28.0	23.0	15.0
75	27.0	19.0	15.0
70	24.0	18.0	14.0
65	23.0	16.0	13.0
60	21.0	15.0	13.0
55	19.0	14.0	11.0
50	18.0	14.0	11.0
45	17.0	13.0	10.0
40	15.0	11.0	9.0
35	14.0	10.0	8.0
30	13.0	9.0	7.0
25	11.0	9.0	7.0
20	10.0	8.0	6.0
15	9.0	6.5	5.0
10	8.0	6.0	4.0
5	6.0	4.0	1.0
1	3.0	1.0	0.0

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* Norms above age 49 not available.

DYNAMIC STRENGTH
Modified Push Up

Females

AGE

%	20-29	30-39	40-49	50-59	60+
99	70	56	60	31	20
95	45	39	33	28	20
90	42	36	28	25	17
85	39	33	26	23	15
80	36	31	24	21	15
75	34	29	21	20	15
70	32	28	20	19	14
65	31	26	19	18	13
60	30	24	18	17	12
55	29	23	17	15	12
50	26	21	15	13	8
45	25	20	14	13	6
40	23	19	13	12	5
35	22	17	11	10	4
30	20	15	10	9	3
25	19	14	9	8	2
20	17	11	6	6	2
15	15	9	4	4	1
10	12	8	2	1	0
5	9	4	1	0	0

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DYNAMIC STRENGTH: BENT-KNEE SIT-UPS

A person who suffers from lower back ailments should not perform this test.

Materials: Gym mat, timer, or stopwatch

Procedures:

1. This test measures the dynamic strength and endurance of the abdominal muscles.
2. The participant lies in a supine position, knees bent at a right angle, and feet shoulder width apart. The hands are placed at the side of the head with the fingers over the ears. The elbows are pointed toward the knees. The hands and elbows must be maintained in these positions for the entire duration of the test. Also, the ankles of the participant must be held throughout the test by the appraiser to ensure that the heels are in constant contact with the mat.
3. It is imperative that the participant is well instructed in the correct performance of the sit-up. The participant should be informed to initiate the sit-up by flattening the lower back followed by actively contracting the abdominal muscles and then continuing the movement with a well-controlled "curling up" of the trunk to the point where the elbows touch the knees. This is followed by a "curling down" of the trunk with particular emphasis on the lower back fully contacting the mat before the upper back and shoulders touch the mat.
4. A "rocking" or "bouncing" movement is not permitted. Also, the participant's buttocks must remain in contact with the mat and the fingers in contact with the side of the head at all times. Have the participant practice one or two repetitions to check for proper technique.
5. Advise the participant that incorrect repetitions, those not meeting the above criteria, will not be counted. The participant should also be advised to avoid breath-holding by breathing rhythmically and to "exhale on effort"; i.e., exhale during "curling-up" phase of the sit-up.
6. The participant is required to sit up, touch the knees with the elbows and return to the starting position (shoulders touch floor). THE PARTICIPANT PERFORMS AS MANY SIT-UPS AS POSSIBLE WITHIN ONE MINUTE. The participant may pause to rest whenever necessary.
7. When the participant is fully informed of the preceding details and is ready to start the sit-ups test, give the command, "Begin" and start the timer.
8. Compare results with the charts on the following pages.

DYNAMIC STRENGTH
1 Minute Sit Up

Males

	AGE					
%	<20	20-29	30-39	40-49	50-59	60+
99	>62.0	>55.0	>51.0	>47.0	>43.0	>39.0
95	62.0	55.0	51.0	47.0	43.0	39.0
90	55.0	52.0	48.0	43.0	39.0	35.0
85	53.0	49.0	45.0	40.0	36.0	31.0
80	51.0	47.0	43.0	39.0	35.0	30.0
75	50.0	46.0	42.0	37.0	33.0	28.0
70	48.0	45.0	41.0	36.0	31.0	26.0
65	48.0	44.0	40.0	35.0	30.0	24.0
60	47.0	42.0	39.0	34.0	28.0	22.0
55	46.0	41.0	37.0	32.0	27.0	21.0
50	45.0	40.0	36.0	31.0	26.0	20.0
45	42.0	39.0	36.0	30.0	25.0	19.0
40	41.0	38.0	35.0	29.0	24.0	19.0
35	39.0	37.0	33.0	28.0	22.0	18.0
30	38.0	35.0	32.0	27.0	21.0	17.0
25	37.0	35.0	31.0	26.0	20.0	16.0
20	36.0	33.0	30.0	24.0	19.0	15.0
15	34.0	32.0	28.0	22.0	17.0	13.0
10	33.0	30.0	26.0	22.0	15.0	10.0
5	27.0	27.0	23.0	17.0	12.0	7.0
1	<27.0	<27.0	<23.0	<17.0	<12.0	<7.0

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DYNAMIC STRENGTH
1 Minute Sit Up

Females

	AGE					
%	<20	20-29	30-39	40-49	50-59	60+
99	>55.0	>51.0	>42.0	>38.0	>30.0	>28.0
95	55.0	51.0	42.0	38.0	30.0	28.0
90	54.0	49.0	40.0	34.0	29.0	26.0
85	49.0	45.0	38.0	32.0	25.0	20.0
80	46.0	44.0	35.0	29.0	24.0	17.0
75	40.0	42.0	33.0	28.0	22.0	15.0
70	38.0	41.0	32.0	27.0	22.0	12.0
65	37.0	39.0	30.0	25.0	21.0	12.0
60	36.0	38.0	29.0	24.0	20.0	11.0
55	35.0	37.0	28.0	23.0	19.0	10.0
50	34.0	35.0	27.0	22.0	17.0	8.0
45	34.0	34.0	26.0	21.0	16.0	8.0
40	32.0	32.0	25.0	20.0	14.0	6.0
35	30.0	31.0	24.0	19.0	12.0	5.0
30	29.0	30.0	22.0	17.0	12.0	4.0
25	29.0	28.0	21.0	16.0	11.0	4.0
20	28.0	24.0	20.0	14.0	10.0	3.0
15	27.0	23.0	18.0	13.0	7.0	2.0
10	25.0	21.0	15.0	10.0	6.0	1.0
5	25.0	18.0	11.0	7.0	5.0	0.0
1	<25.0	<18.0	<11.0	<7.0	<5.0	0.0

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INDIVIDUAL SELF ASSESSMENT

DATE: _____

1. **FLEXIBILITY:** Sit and Reach Score: _____ Inches – Norm percentile = _____ %
2. **DYNAMIC STRENGTH:** No. Sit-ups: _____ - Norm percentile = _____ %
3. **DYNAMIC STRENGTH:** No. Push-ups: _____ - Norm percentile = _____ %
4. **CARDIOVASCULAR:** 1.5 Mile Run Score: _____ Min. _____ Sec. – Norm percentile = _____ %
 1 Mile Walk Score: _____ Min. _____ Sec. – Rating = _____

NOTES: